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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/737,540	12/15/2000	Jae-Hoon Lee	SAM-134	9736
7590		11/18/2004	EXAMINER	
MILLS & ONELLO, LLP		KANG, DONGHEE		
ELEVEN BEACON STREET		ART UNIT		
SUITE 605		PAPER NUMBER		
BOSTON, MA 02108		2811		

DATE MAILED: 11/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/737,540

Applicant(s)

LEE ET AL.

Examiner

Donghee Kang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 18-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-9 is/are allowed.
- 6) ☒ Claim(s) 18, 20, 21 & 25 is/are rejected.
- 7) ☒ Claim(s) 19 and 22-24 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09-07-04 has been entered.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 18 & 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Yew et al. (US 6,265,780).

Re claim 18, Yew et al. teach a wiring of a semiconductor device comprising (Fig.2E):

a first conductive layer (202) formed on a semiconductor substrate (200); a first insulation layer (204) formed on said first conductive layer; a second insulation layer (206) formed immediately over said planarized surface of first insulation layer and

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contacting said first insulation layer; a second conductive layer contacting said first conductive layer through a via hole (222) formed in said first and second insulation layers; a groove (218a) formed in said second insulation layer over the via hole in contact with the via hole, and having a width wider than a width of the via hole, the groove having a depth less than the thickness of said second insulation layer; and a third conductive layer formed in the groove formed in said second insulation layer, the third conductive layer having a thickness less than the thickness of said second insulation layer. Yew et al. do not explicitly teach CMP process. However, this is a product-by-process limitation. The process limitations are given no patentable weight in device claim. The final structure of claimed invention is identical to the Yew's device.

“Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production.

If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process”. In re Thorpe, 777F. 2d 695,698 USPQ 964, 966 (Fed. Cir.1985). See also MPEP 2113. Moreover, an old or obvious product produced by a new method is not a patentable product, whether claim in “product by process” claim or not.

Re claim 20, Yew et al. teach said second conductive layer comprises a plug filling said via hole.

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4. Claims 18, 21 & 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Horstmann et al. (US 6,541,863).

Re claim 18, Horstmann et al. teach a wiring of a semiconductor device comprising (Fig.1):

a first conductive layer (42) formed on a semiconductor substrate (11); a first insulation layer (1) formed on said first conductive layer; a second insulation layer (7) formed immediately over said planarized surface of first insulation layer and contacting said first insulation layer; a second conductive layer (2 & 8) contacting said first conductive layer through a via hole (14 & 12) formed in said first and second insulation layers; a groove (13) formed in said second insulation layer over the via hole in contact with the via hole, and having a width wider than a width of the via hole, the groove having a depth less than the thickness of said second insulation layer; and a third conductive layer (9) formed in the groove formed in said second insulation layer, the third conductive layer having a thickness less than the thickness of said second insulation layer.

Horstmann et al. do not explicitly teach CMP process. However, this is a product-by-process limitation. The process limitations are given no patentable weight in device claim. The final structure of claimed invention is identical to the Horstmann's device.

Re claim 21, Horstmann et al. teach said first conductive layer is an impurity doped region on said semiconductor substrate.

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Re claim 24, Horstmann et al. teach said second conductive layer is formed from a metal selected from a group consisting of tungsten, aluminum and copper (Col.2, lines 66-67 & Col.3, lines 31-34).

***Allowable Subject Matter***

5. Claims 1-9 are allowed.

Claims 19 & 22-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donghee Kang whose telephone number is 571-272-1656. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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A handwritten signature in black ink, appearing to read 'Kang Donghee', written in a cursive style.

Donghee Kang, Ph.D.  
Primary Examiner  
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dhk